

WHAT IS CLAIMED IS:

1. A substrate transfer apparatus comprising:

transfer means, having a holding member for
holding a transparent substrate, for making the holding
5 member to hold the transparent substrate and
transferring the transparent substrate;

reading means having first and second parts
separated from each other to optically read a pattern
formed on the transparent substrate, the first part
10 being built into said transfer means; and

control means for moving the holding member so
that the first and second parts have a predetermined
positional relationship while the transparent substrate
is being held, and making said reading means read the
15 pattern.

2. The apparatus according to 1, wherein the first
part is arranged in the holding member.

3. The apparatus according to 2, wherein said
reading means reads the pattern by making a reflecting

20 portion formed on an opposite surface of the
transparent substrate reflect light from an
illumination portion, and making a detection portion
detect the reflected light, the first part forms the
reflecting portion, and the second part forms the
25 illumination portion and the detection portion.

4. The apparatus according to claim 3, wherein the
reflection portion is formed by attaching a mirror to a

predetermined portion of the holding member.

5. The apparatus according to claim 3, wherein the reflecting portion is formed by attaching a white tape to a predetermined portion of the holding member.

5 6. The apparatus according to claim 3, wherein the reflecting portion is formed by mirror-finishing a predetermined portion of the holding member.

7. The apparatus according to claim 3, wherein the reflecting portion is formed by arranging a corner cube
10 at a predetermined portion of the holding member.

8. The apparatus according to claim 3, wherein the illumination portion comprises one of an LED and a semiconductor laser.

9. The apparatus according to claim 2, wherein said
15 reading means reads the pattern by making a detection portion detect light emitted from an illumination portion and passing through the transparent substrate, the first part forms the illumination portion, and the second part forms the detection portion.

20 10. The apparatus according to claim 9, wherein the illumination portion comprises one of an LED and a semiconductor laser.

25 11. The apparatus according to claim 2, wherein the second part is formed at a predetermined position associated with a transfer path of the transparent substrate transferred by said transfer means.

12. The apparatus according to claim 2, wherein the

second part is formed integrally with said transfer means so that the transparent substrate can be transferred while the first and second parts keep the predetermined positional relationship.

5 13. The apparatus according to claim 2, wherein said transfer means extracts the transparent substrate from at least two substrate containers and transfers the transparent substrate to a predetermined processing unit.

10 14. The apparatus according to claim 2, wherein the holding member comprises a pair of holding arms spaced apart at a predetermined interval, and a chucking mechanism for holding the transparent substrate by the holding arms, and the first part is incorporated in one
15 of the pair of holding arms.

15. A semiconductor manufacturing apparatus comprising:

a substrate transfer apparatus for transferring to an exposure position a reticle obtained by forming
20 an exposure pattern and information pattern on a transparent substrate; and

exposure means for exposing a target exposure substrate using the reticle transferred to the exposure position,

25 said substrate transfer apparatus comprising transfer means, having a holding member for holding a transparent substrate, for making the holding

member hold the transparent substrate and transferring the transparent substrate,

reading means having first and second parts separated from each other to optically read a pattern
5 formed on the transparent substrate, the first part being built into said transfer means, and

control means for moving the holding member so that the first and second parts have a predetermined positional relationship while the transparent substrate
10 is being held, and making said reading means read the pattern.

16. A device manufacturing method comprising the steps of:

installing a plurality of semiconductor
15 manufacturing apparatuses in a factory; and
manufacturing a semiconductor device using the plurality of semiconductor manufacturing apparatuses,
at least one of the plurality of semiconductor manufacturing apparatuses comprising

20 a substrate transfer apparatus for transferring to an exposure position a reticle obtained by forming an exposure pattern and information pattern on a transparent substrate; and

exposure means for exposing a target exposure
25 substrate using the reticle transferred to the exposure position,

the substrate transfer apparatus comprising

transfer means, having a holding member for holding a transparent substrate, for making the holding member hold the transparent substrate and transferring the transparent substrate,

- 5 reading means having first and second parts separated from each other to optically read a pattern formed on the transparent substrate, the first part being built into the transfer means, and

10 control means for moving the holding member so that the first and second parts have a predetermined positional relationship while the transparent substrate is being held, and making the reading means read the pattern.

17. The method according to claim 16, further
15 comprising the steps of:

 connecting the plurality of semiconductor manufacturing apparatuses via a local area network;

 connecting the local area network to an external network outside the factory;

- 20 acquiring information about at least one semiconductor manufacturing apparatus from a database on the external network by using the local area network and the external network; and

 controlling the at least one semiconductor
25 manufacturing apparatus on the basis of the acquired information.

18. The method according to claim 17, wherein a

database provided by a manufacturer of a semiconductor device or a supplier of the manufacturing apparatus is accessed via the external network to obtain maintenance information of the semiconductor manufacturing apparatus, or data communication is performed with another semiconductor manufacturing factory different from the semiconductor manufacturing factory via the external network to perform production management.

19. A semiconductor manufacturing factory comprising:

10. a plurality of semiconductor manufacturing apparatuses;

 a local area network for connecting the plurality of semiconductor manufacturing apparatus; and

 a gateway for connecting the local area network

15 and an external network outside the semiconductor manufacturing factory,

 at least one of the plurality of semiconductor manufacturing apparatuses comprising

 a substrate transfer apparatus for transferring

20 to an exposure position a reticle obtained by forming an exposure pattern and information pattern on a transparent substrate; and

 exposure means for exposing a target exposure substrate using the reticle transferred to the exposure

25 position,

 the substrate transfer apparatus comprising transfer means, having a holding member for

holding a transparent substrate, for making the holding member hold the transparent substrate and transferring the transparent substrate,

5 reading means having first and second parts separated from each other to optically read a pattern formed on the transparent substrate, the first part being built into the transfer means, and

control means for moving the holding member so that the first and second parts have a predetermined
10 positional relationship while the transparent substrate is being held, and making the reading means read the pattern.

20. A maintenance method for a semiconductor manufacturing apparatus, comprising the steps of:

15 preparing a database for storing information about maintenance of the semiconductor manufacturing apparatus, on an external network outside a factory in which the semiconductor manufacturing apparatus is installed;

20 connecting the semiconductor manufacturing apparatus to a local area network in the factory; and
maintaining the semiconductor manufacturing apparatus on the basis of information stored in the database by using the external network and the local
25 area network,

the semiconductor manufacturing apparatus comprising

a substrate transfer apparatus for transferring to an exposure position a reticle obtained by forming an exposure pattern and information pattern on a transparent substrate; and

- 5 exposure means for exposing a target exposure substrate using the reticle transferred to the exposure position,

the substrate transfer apparatus comprising

- transfer means, having a holding member for
10 holding a transparent substrate, for making the holding member hold the transparent substrate and transferring the transparent substrate,

- reading means having first and second parts separated from each other to optically read a pattern
15 formed on the transparent substrate, the first part being built into the transfer means, and

- control means for moving the holding member so that the first and second parts have a predetermined positional relationship while the transparent substrate
20 is being held, and making the reading means read the pattern.